

## Experimental Climate Monitoring and Prediction

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### Highlights

- The WRF model predicts up to 65 mm of rainfall in Matara District on 18th March.
- Between 8-13 Mar: highest rainfalls of 140 mm were recorded on the 12<sup>th</sup> in Anuradhapura district and on the 13<sup>th</sup> on Vavuniya district.
- From 5-11 Mar: minimum temperature of 15 °C was recorded from Nuwara Eliya district while many parts of the island recorded a maximum temperature between 30-35 °C.
- From 7-13 Mar: up to 11 km/h, southeasterly winds were experienced by the entire island.
- 0.5 °C below average sea surface temperature was observed in the northwestern seas of Sri Lanka.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On March 8<sup>th</sup> Kurunegala and Gampaha districts received up to 80 mm of rainfall; Puttalam district up to 50 mm; Mannar, Kegalla and western regions of Matale districts up to 40 mm; Colombo and several areas of Anuradhapura and Ratnapura districts up to 30 mm; and Northern regions of Kalutara district up to 20 mm. On the 9<sup>th</sup> Kumana region of Ampara district received up to 50 mm of rainfall; Kandy district up to 30 mm; and Hambantota, Kurunegala, Kegalla districts up to 20 mm. On the 10<sup>th</sup> Anuradhapura district received up to 50 mm of rainfall; Kandy district received up to 40 mm of rainfall; Vavuniya, Mannar, Puttalam, Kurunegala and Badulla districts up to 30 mm; Matale, Nuwara Eliya, Monaragala and Ampara districts up to 20 mm. On the 11<sup>th</sup> Batticaloa, Anuradhapura, Polonnaruwa, Matale, Kurunegala, Badulla and Monaragala districts received up to 80 mm of rainfall; Mullaitivu, Vavuniya, Batticaloa, Hambantota and Ratnapura districts up to 50 mm; Kegalla and Kandy districts up to 40 mm; Puttalam, Gampaha, Colombo and Matara districts up to 30 mm; and Kalutara and Galle districts up to 20 mm. On the 12<sup>th</sup> Anuradhapura district received up to 140 mm of rainfall; Kurunegala district up to 120 mm; Ampara, Polonnaruwa and Matale districts up to 80 mm; Vavuniya, Batticaloa, Ratnapura and Kegalla districts up to 40 mm; Mullaitivu, Trincomalee, Batticaloa, Monaragala, Badulla and Kandy districts up to 30 mm; and Kilinochchi, Mannar, Puttalam, Gampaha and Kandy districts up to 20 mm. On the 13<sup>th</sup> Mullaitivu district received up to 140 mm of rainfall; Vavuniya district up to 90 mm; Mannar, Kegalla and Monaragala districts up to 50 mm; Jaffna, Kilinochchi, Puttalam, Anuradhapura, Kurunegala, Colombo, Nuwara Eliya, Badulla and Ampara districts up to 40 mm; Trincomalee, Polonnaruwa, Matale, Kandy and Galle districts up to 30 mm; and Matara and Hambantota districts up to 20 mm.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall up to 300 mm for Anuradhapura district; up to 200 mm for Vavuniya, Kurunegala, Polonnaruwa, Kandy, Kegalla and Ratnapura districts; up to 150 mm for Mannar, Puttalam, Batticaloa, Badulla, Monaragala, Matale, Nuwara Eliya, Galle, Matara and Hambantota, Gampaha and Colombo districts; up to 100 mm for Kilinochchi, Mullaitivu and Kalutara districts. It shows above average rainfall of 200-300 mm for Anuradhapura district; 100-200 mm for Vavuniya, Mannar, Kurunegala, Kegalla, Polonnaruwa, Ampara, Matale, Kandy, Nuwara Eliya, Badulla, Gampaha, Colombo and Ratnapura districts; 50-100 mm for Puttalam, Mullaitivu, Trincomalee, Batticaloa and Kalutara districts.

**Monthly Monitoring:** During February - above average rainfall conditions were experienced in Jaffna, Badulla, Hambantota and several regions of Kilinochchi, Vavuniya, and Anuradhapura districts. These regions received up to 90 mm above average rainfall. Batticaloa district received below average rainfall up to 150 mm; and many parts of the island received up to 120 mm below average rainfall. Monthly average rainfall for Anuradhapura, Vavuniya, Kandy, Nuwara Eliya, Badulla, Monaragala and Hambantota districts amounted to 150 mm/month; and 90 mm/month for many parts of the island. The CPC Unified Precipitation Analysis tool shows ~100 mm of total rainfall in Vavuniya, Anuradhapura, Matale, Kurunegala, Nuwara Eliya, Badulla, Monaragala and Hambantota districts; up to ~75 mm in Kandy, Ratnapura, Ampara, Polonnaruwa, Kalutara and Matara districts; and up to ~50 mm Puttalam, Gampaha, Colombo, Kegalla, Galle and Batticaloa districts.

## Ocean State (Text Courtesy IRI)

### **Pacific sea state: March 9, 2017**

During early March 2017 the tropical Pacific SST anomaly was mainly close to 0.0C, in the ENSO-neutral range, but warmer than average SST was observed in the eastern one-third of the basin. Although most of the atmospheric variables across the tropical Pacific are now approximately ENSO-neutral, the pattern of cloudiness and rainfall in the central and western tropical Pacific remains indicative of a weak La Niña condition. The collection of ENSO prediction models indicates SSTs are likely to remain neutral through May 2017, with an increasing chance for El Niño development later in the year.

### **Indian Ocean State**

0.5 °C below average sea surface temperature was observed in the northwestern seas of Sri Lanka.

## **Predictions**

### **Rainfall**

#### **14-day prediction:**

#### **NOAA NCEP models:**

From 15th – 21st Mar: Up to 15 mm rainfall in Kurunegala, Kegalle, Kandy, Matale, Badulla, Monaragala, Jaffna, Vavuniya, Mullaitivu districts and North central and Eastern provinces.

From 22nd – 28th Mar: Total rainfall up to 25 mm in Central Province and Kegalla, Kurunegala, Badulla districts. Up to 15 mm in Jaffna, Anuradhapura, Polonnaruwa, Trincomalee, Batticaloa, Ampara, Ratnapura, Monaragala and Gampaha.

#### **IMD WRF & IRI Model Forecast:**

17th March: Up to 36 mm of rainfall in Jaffna, Anuradhapura, Kurunegala, Gampaha, Kalutara, Ratnapura and Hambantota districts. Up to 8 mm rainfall all over the country except some areas of Monaragala, Badulla and Ampara districts.

18th March: Up to 65 mm of rainfall in Matara district. Up to 36 of mm rainfall in Galle, Kalutara, Ratnapura and Matara districts. Up to 8 mm of rainfall in Colombo, Gampaha, Kegalla, Hambantota, districts and Central and Uva provinces. Up to 3 mm of rainfall in Ampara, Polonnaruwa and some areas of Kurunegala Districts.

#### **Seasonal Prediction:** IRI Multi Model Probability Forecast

April to June: the total 3-month precipitation shall be climatological for the whole country. The 3-month temperature has more than 70-80% likelihood in the southern region and 60-70% likelihood in the central region of being in the above-normal tercile

### **MJO based OLR predictions**

#### **For the next 15 days:**

MJO shall enhance the rainfall in Sri Lanka for the upcoming 10 days and shall not have a significant impact on rainfall for the following 5 days.

<sup>1</sup> International Research Institute for Climate and Society, Earth Institute at Columbia University, New York.  
Official hydro-meteorological statements are provided by the Sri Lanka Department of Meteorology and Department of Irrigation.

## **FECT BLOG**

Past reports available at <http://fectsl.blogspot.com/> and <http://fectsl.wordpress.com/>

## **FECT WEBSITES**

<http://www.climate.lk> and <http://www.tropicalclimate.org/>



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## Weekly Hydro- Meteorological Report for Sri Lanka

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#### 1. Monitoring

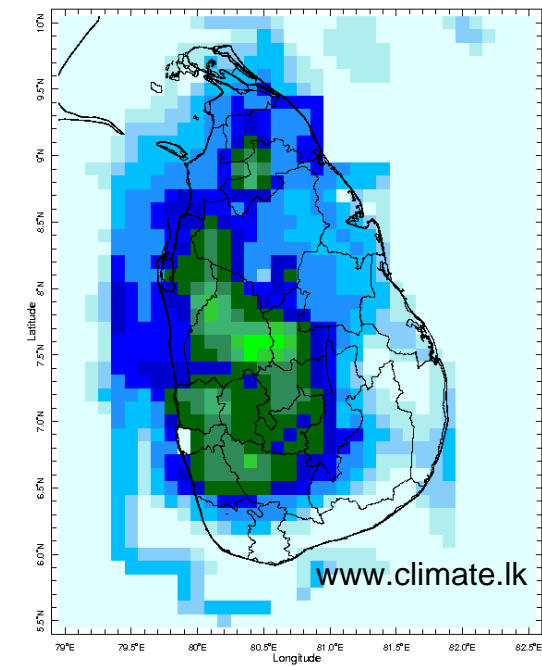
- a. Daily Rainfall Monitoring
- b. Monthly Rainfall Monitoring
- c. Dekadal (10 Day) Satellite Derived Rainfall Estimates
- d. Weekly Average SST Anomalies

#### 2. Predictions

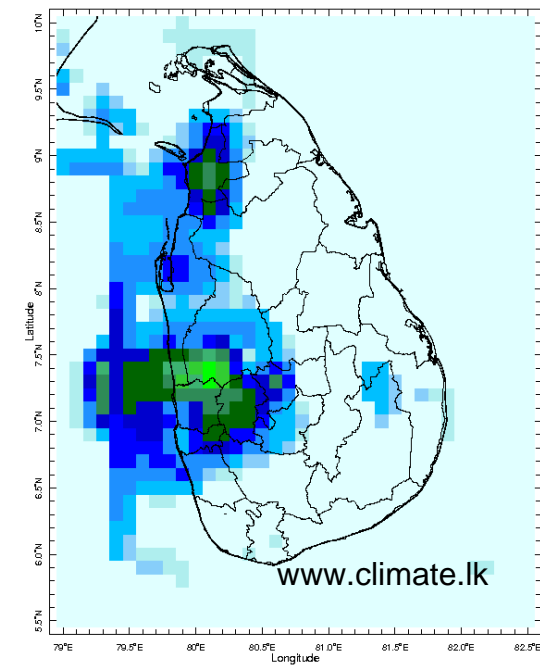
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. WRF Model Rainfall Forecast from IMD Chennai
- c. Weekly Precipitation Forecast from IRI
- d. Seasonal Predictions from IRI

Daily Rainfall Monitoring

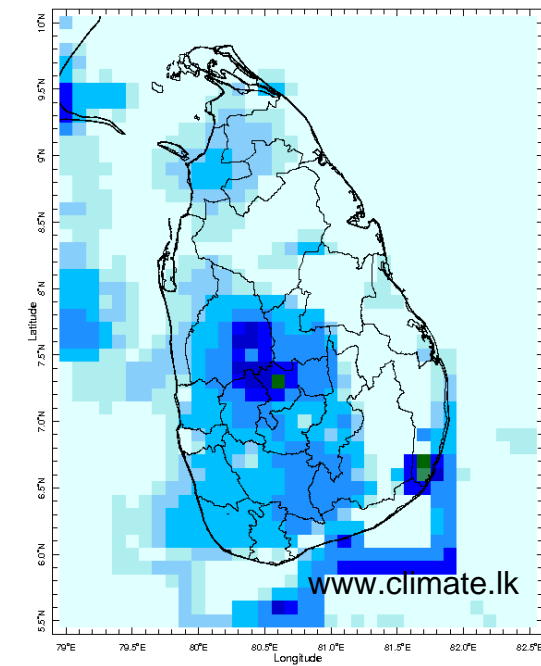
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



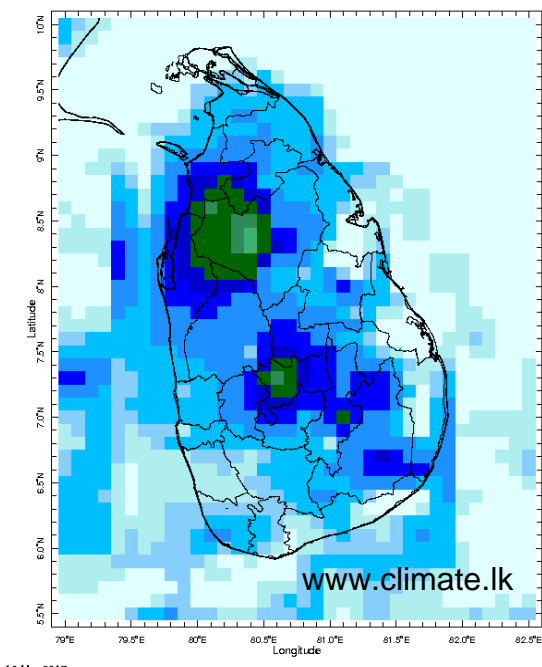
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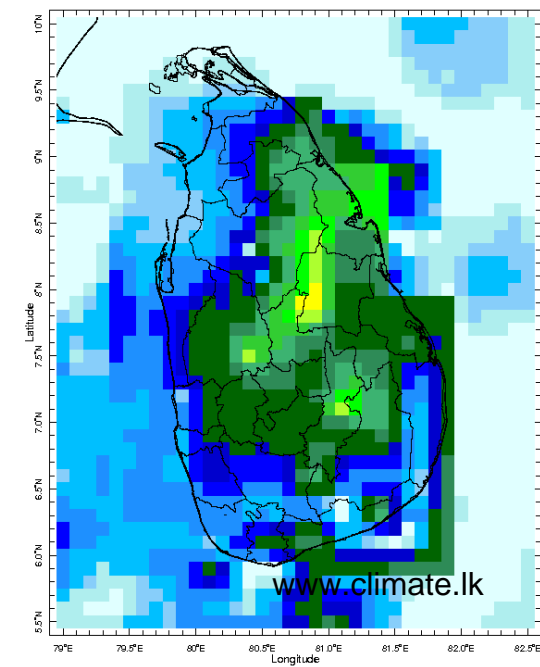
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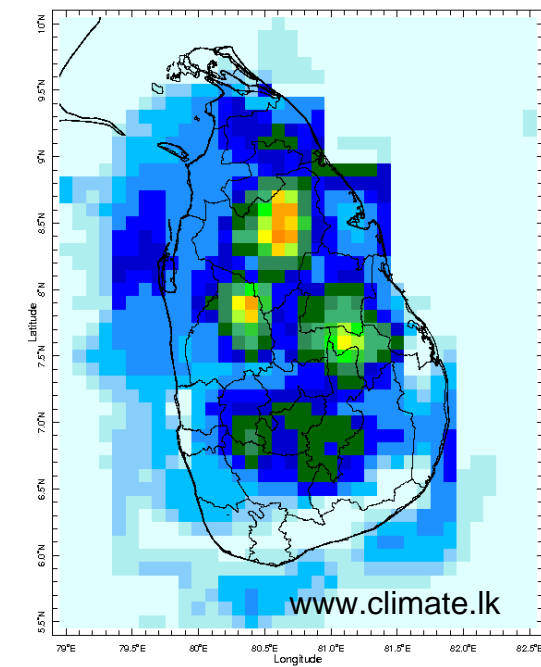
9 Mar 2017



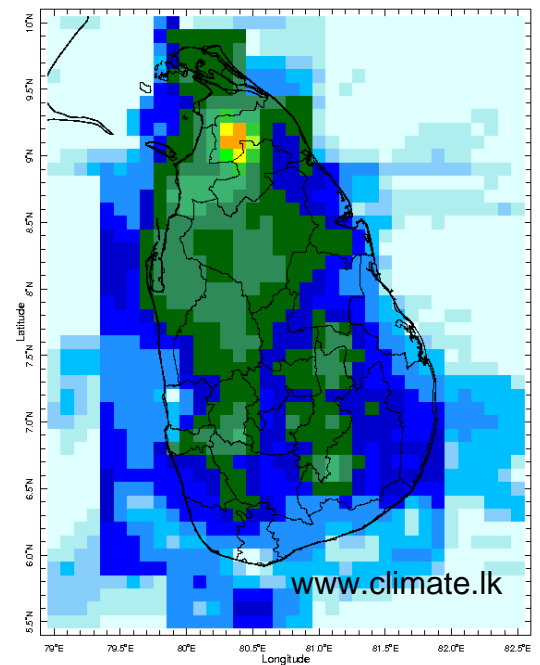
10 Mar 2017



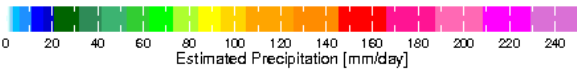
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12 Mar 2017

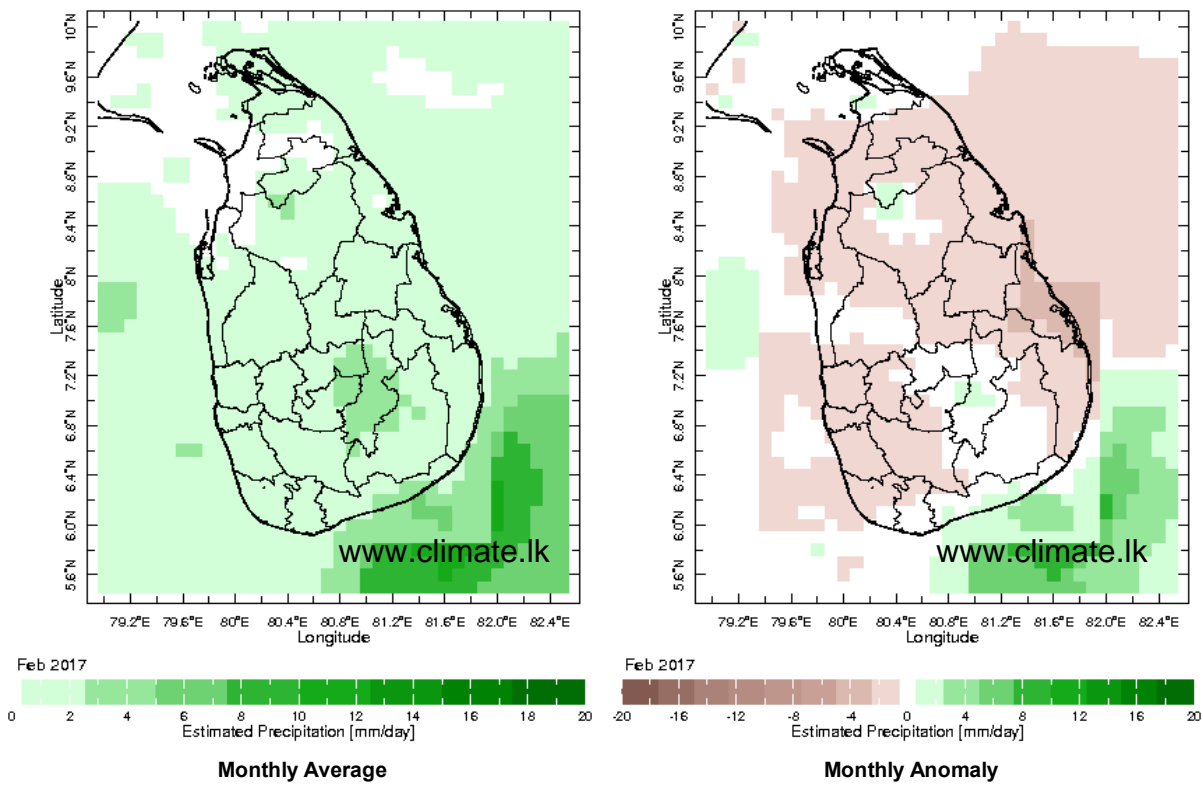


13 Mar 2017

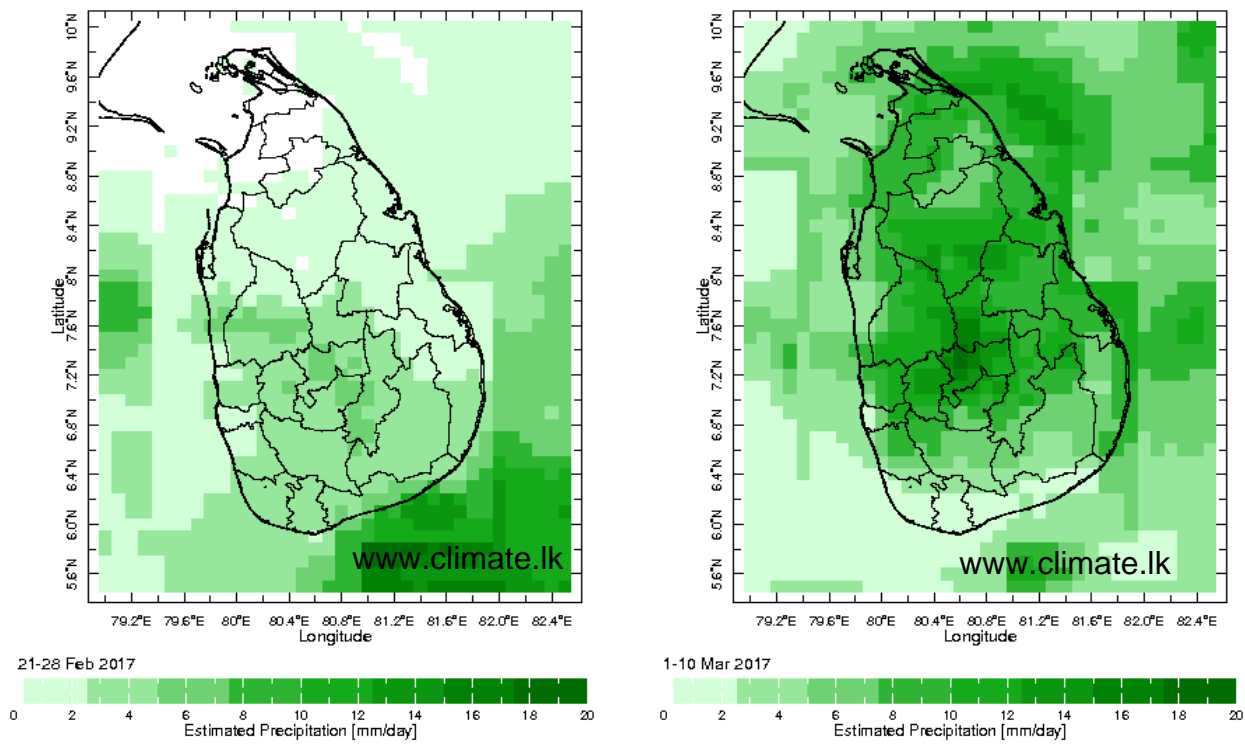


Monthly Rainfall Monitoring

The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places with above average rainfall. Darker shades show higher magnitudes in rainfall

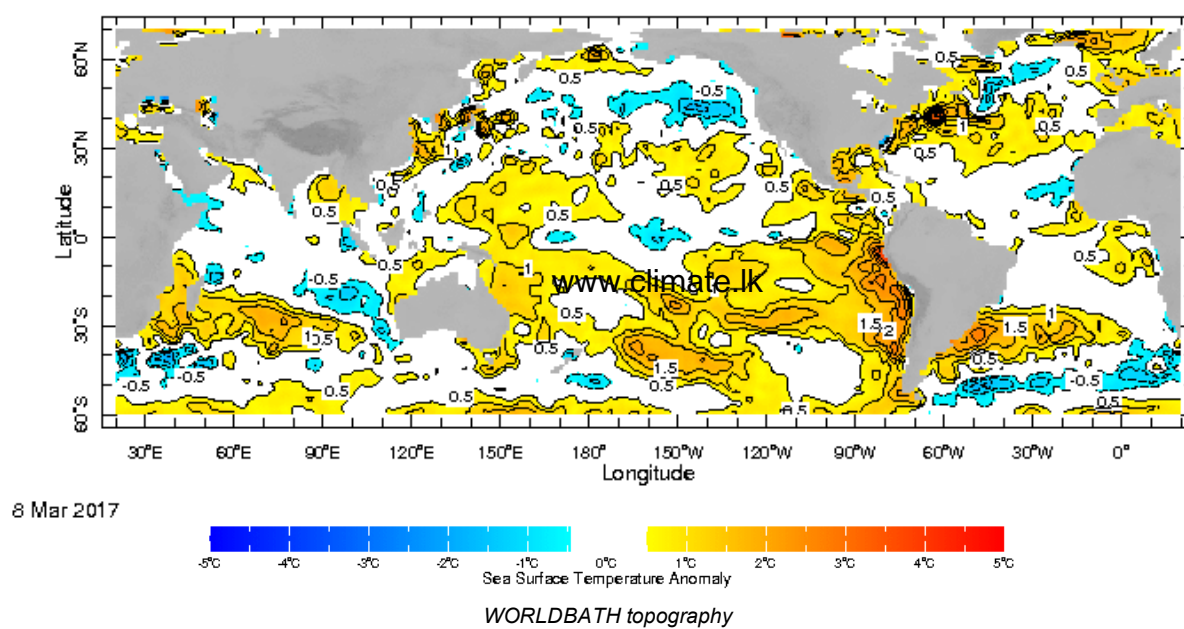


Dekadal (10 Day) Satellite Derived Rainfall Estimates

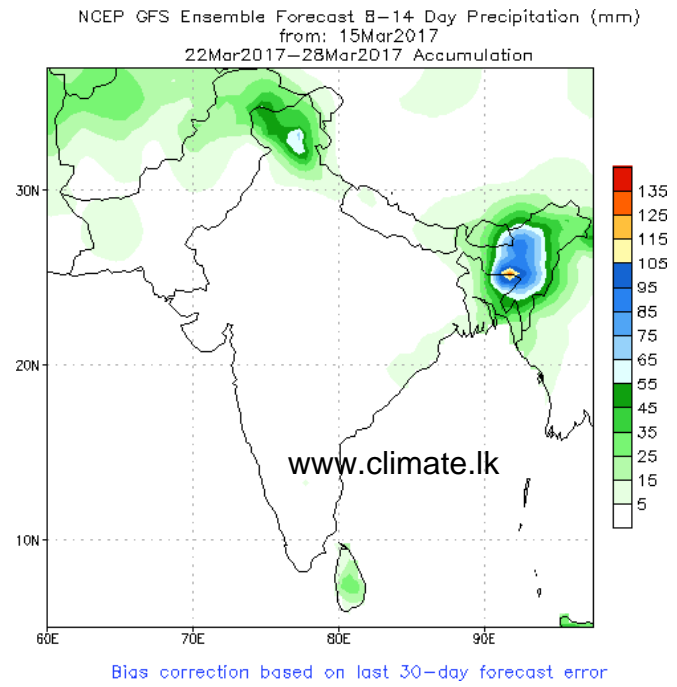
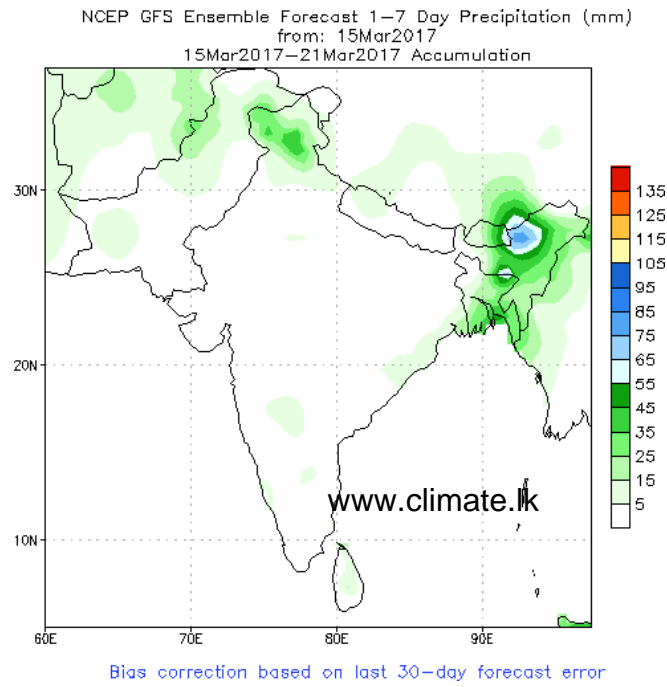


## Weekly Average SST Anomalies

Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP

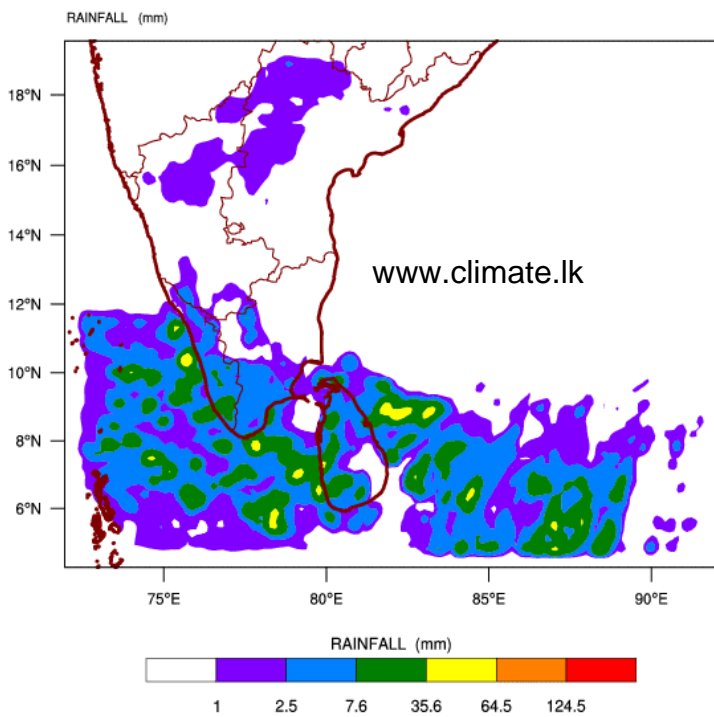


## NCEP GFS 1- 14 Day prediction

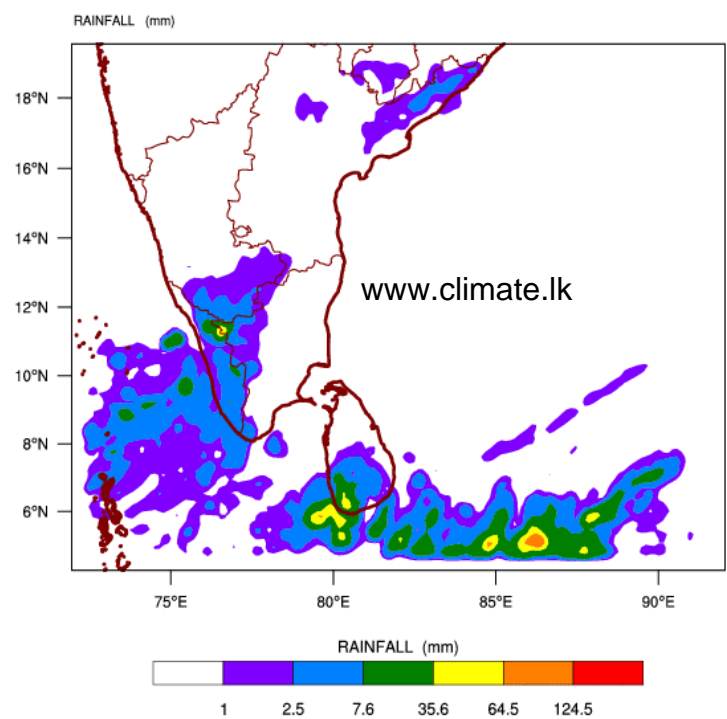


## WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 15-03-2017 valid for 03 UTC of 17-03-2017

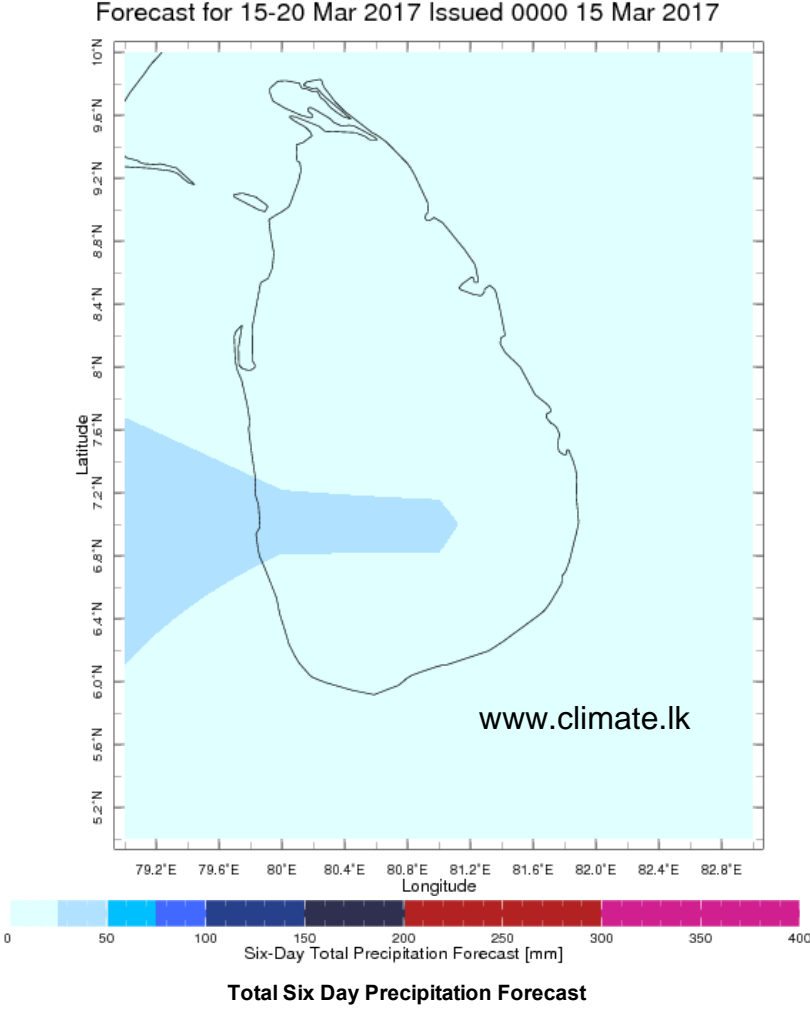
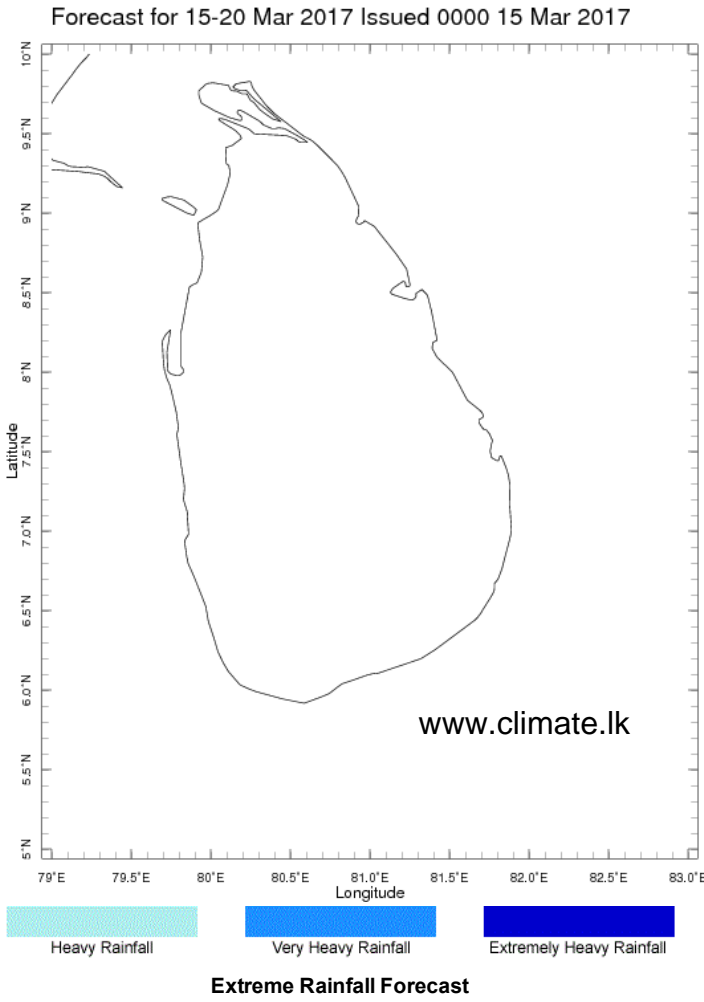


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 15-03-2017 valid for 03 UTC of 18-03-2017



Weekly Rainfall Forecast from IRI

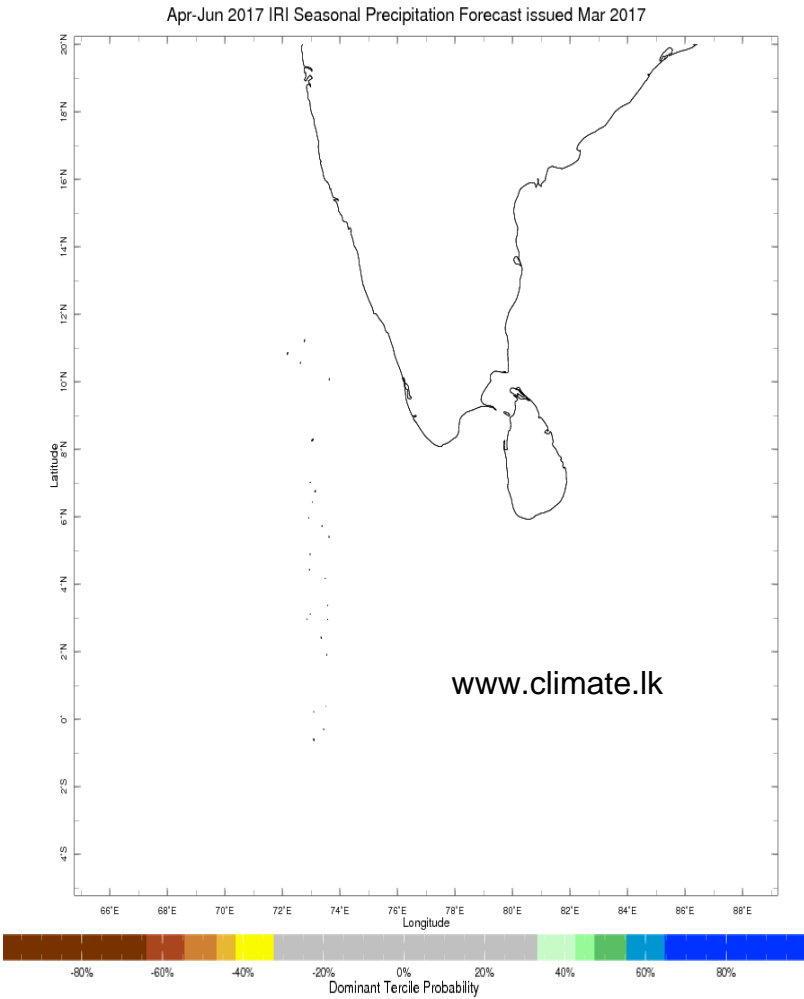
Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.



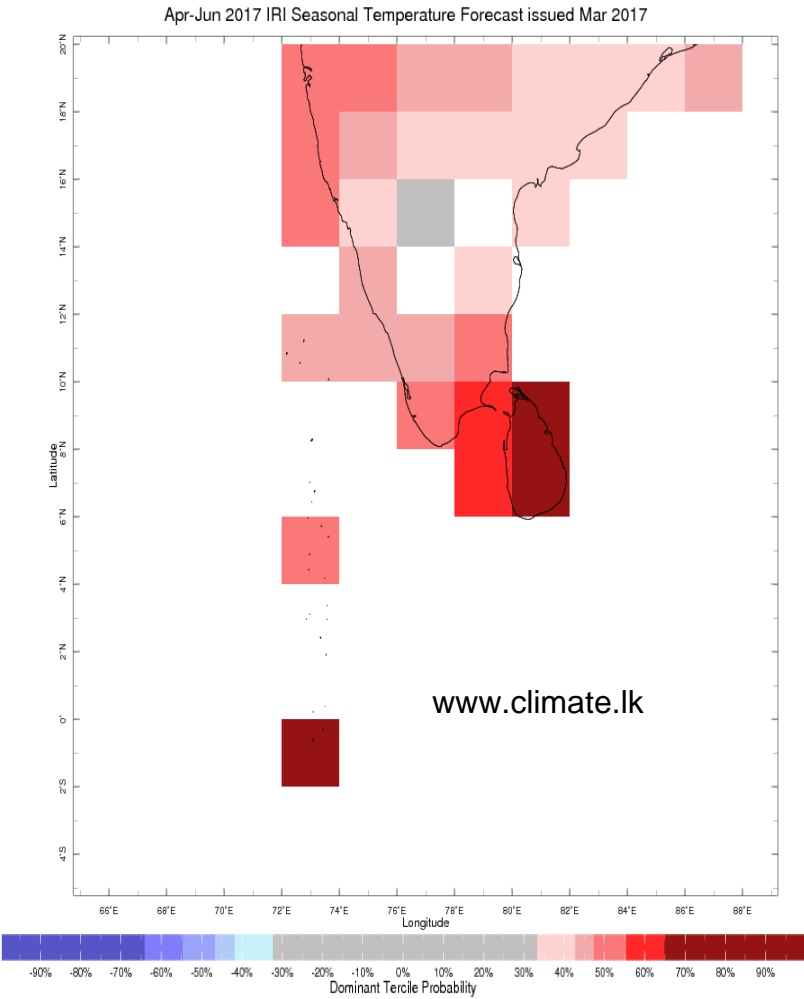


Seasonal Rainfall and Temperature Forecast

Following is the latest seasonal precipitation and temperature prediction for the next 3 months by the IRI. The color shading indicates the probability of the most dominant tercile -- that is, the tercile having the highest forecast probability. The color bar alongside the map defines these dominant tercile probability levels. The upper side of the color bar shows the colors used for increasingly strong probabilities when the dominant tercile is the above-normal tercile, while the lower side shows likewise for the below-normal tercile. The gray color indicates an enhanced probability for the near-normal tercile (nearly always limited to 40%).



Precipitation Forecast



Temperature Forecast

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